

Effluent Disposal and Minimization – Agency Perspective

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I'm Cindi Godsey, and I work for the Environmental Protection Agency in the NPDES Permit Program. When I was asked to speak today, they asked me to talk about NPDES and technology, so what I want to do first is give an NPDES-101 course.

This is the history of Federal pollution control legislation, starting in 1899, so we have a long history of this. The latest is the Clean Water Act of 1987. Section 402 of the Clean Water Act states that no discharge of pollutants from a point source into waters of the United States unless the discharge is in compliance with an NPDES permit.

Federal Water Pollution Control Legislation - 1899 through 1987

River and Harbor Act of 1899

PL 80-845	Water Pollution Control Act of 1948
PL 82-579	Water Pollution Control Act Extension of 1952
PL 84-660	Federal Water Pollution Control Act of 1956
PL 87-88	Federal Water Pollution Control Act Amendments of 1961
FL 89-234	Water Quality Act of 1965
PL 89-753	Clean Water Restoration Act of 1966
PL 91-224	Water Quality Improvement Act of 1969
PL 92-50	Federal Water Pollution Control Act Extension of 1972
PL 92-137	Federal Water Pollution Control Act,-Extension of 1972
PL §2-240	Federal Water Pollution Control Act Extension of 1972
PL 92-500	Federal Water Pollution Control Act Amendments of 1972
PL 93-207	Federal Water Pollution Control Act Amendments of 1973
PL 93-243	Federal Water Pollution Control Act Amendments of 1974
PL 93-592	Federal Water Pollution Control Act Amendments of 1975
PL 94-238	Federal Water Pollution Control Act Amendments of 1976
PL 94-558	Federal Water Pollution Control Act Amendments of 1976
PL 95-217	Clean Water Act of 1977
PL 95-576	Federal Water Pollution Control Act Amendments of 1978
*PL 96-483	Federal Water Pollution Control Act Amendments of 1980
PL 97-117	Municipal Wastewater Treatment Construction Grant Amendments of 1981
PL 100-4	Water Quality Act of 1987

I'll give you several definitions. The first one is the definition of "***pollutant***", which can basically be anything:

"Pollutant" means dredged spoil, solid waste, incinerator residue, filter backwash, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water (40 CFR 122.2).

The second is the definition of a ***point source***, which may basically be from anywhere:

"Point Source" means any discernable, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged (40 CFR 122.2).

The third is ***Waters of the United States*** or ***Waters of the U.S.*** which is any drop of water that is "thoroughly natural":

Waters of the United States include:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (b) All interstate waters, including Interstate "Wetlands;"
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition
- (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) "Wetlands" adjacent to waters (other than waters that are themselves, wetlands) identified in paragraphs (a) through (f) of this definition.

Section 301 of the Clean Water Act that requires the development of technology-based effluent limits for different categories of dischargers. Section 301 basically sets aside certain times for each category of discharger by which time they must have some form of technology-based limits developed for them. Of course we missed all the deadlines, but there are some out there.

EPA has to develop these deadlines by the time they issue the NPDES permit for certain categories that the permit writers have developed technology-based limits for you guys.

So in developing the effluent guidelines, as well as developing technology-based limits, according to each permit writer's best professional judgement, there are a few things that EPA takes into consideration. There are three different factors. The first is the **Best Practical Control Technology (BPT)** currently available. BPT takes into account:

1. The total cost of application of the technology in relation to the effluent reduction benefits to be achieved from such application;
2. The age of equipment and facilities involved;
3. The processes employed;
4. The engineering aspects of the application of various types of control techniques;
5. What process changes the industry might have to go through to upgrade; and
6. Any non-water quality environmental impact, including energy impacts.

The second is "**Best Conventional Pollutant Control Technology (BCT)**". This applies to **Conventional Pollutants**, which include:

1. Biochemical Oxygen Demand (BOD);
2. Total Suspended Solids (TSS);
3. pH;
4. Fecal Coliform; and
5. Oil and Grease.

In determining how to control these conventional pollutants, assessing BCT involves:

1. The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived;
2. The comparison of the cost and the level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources;
3. The age of equipment and facilities involved;
4. The process employed;
5. The engineering aspects of the application of various types of control techniques;
6. Process changes; and

7. Non-water quality environmental impact, including energy requirements.

Finally there is “**Best Available Technology** that is economically achievable (**BAT**), which states that we must look at the direct cost. While the others were comparisons, the BAT involves looking at the cost associated with achieving the reduction. Here we consider:

1. The age of equipment and facilities involved;
2. The process employed;
3. The engineering aspects of the application of various types of control techniques;
4. The cost of achieving such effluent reduction;
5. Process changes; and
6. Non-water quality environmental impact (including energy requirements).

When EPA writes an NPDES permit, all of these things are considered, but they are considered also against water quality standards. And in setting permit limits based on water quality standards there is no cost that is determined, and that is really the deciding factor on many parameters where, for example, there may be a limit on metals, and if the water quality standard is more stringent, then that is what we have to go with on the permit, with no consideration as to how much that might cost to achieve that effluent limit.

I think I've pretty much covered it, and how we consider costs and other factors in writing an NPDES permit, but how these factors are superseded by the water quality standards